1.0 PURPOSE AND NEED

Chapter 1 presents the Department of Energy (DOE), National Nuclear Security Administration's (NNSA[2]) requirements under the *National Environmental Policy Act of 1969* (NEPA), background information on the proposal, the purpose and need for agency action, and a summary of public involvement activities.

1.1 Introduction

NEPA requires Federal agency officials to consider the environmental consequences of their proposed actions before decisions are made. In complying with NEPA, NNSA follows the Council on Environmental Quality regulations (40 Code of Federal Regulations [CFR] 1500–1508) and DOE's NEPA implementing procedures (10 CFR 1021). The purpose of an environmental assessment (EA) is to provide Federal decision makers with sufficient evidence and analysis to determine whether to prepare an environmental impact statement or issue a Finding of No Significant Impact.

At this time, the NNSA must make a decision regarding the issuance of an easement to the Public Service Company of New Mexico (PNM) for the purpose of installing, operating, and maintaining a natural gas service pipeline at Los Alamos National Laboratory (LANL). LANL is a Federal facility located at Los Alamos, New Mexico, that comprises 43 square miles (mi^2) (111 km^2) of buildings, structures, and forested land (Figure 1). It is administered by NNSA, for the Federal government, and managed and operated under contract by the University of California (UC). This EA has been prepared to assess the potential environmental consequences of the issuance of this proposed easement for the purpose of installing and operating a new natural gas pipeline, together with the No Action Alternative.

The objectives of this EA are to (1) describe the underlying purpose and need for DOE action; (2) describe the Proposed Action and identify and describe any reasonable alternatives that satisfy the purpose and need for Agency Action; (3) describe baseline environmental conditions at LANL; (4) analyze the potential indirect, direct, and cumulative effects to the existing environment from implementation of the Proposed Action, and (5) compare the effects of the Proposed Action with the No Action Alternative and other reasonable alternatives. For the purposes of compliance with NEPA, reasonable alternatives are identified as being those that meet DOE's purpose and need for action by virtue of timeliness, appropriate technology, and applicability to LANL. The EA process provides DOE with environmental information that can be used in developing mitigative actions, if necessary, to minimize or avoid adverse effects to the quality of the human environment and natural ecosystems should DOE decide to proceed with implementing the construction and operation of a new gas pipeline at LANL.

Ultimately, the goal of NEPA, and this EA, is to aid DOE officials in making decisions based on an understanding of environmental consequences and taking actions that protect, restore, and enhance the environment.

[2] The NNSA is a separately organized agency within the DOE established by the 1999 *National Nuclear Security Administration Act* [Title 32 of the *Defense Authorization Act* for Fiscal Year 2000 (Public Law 106-65)].

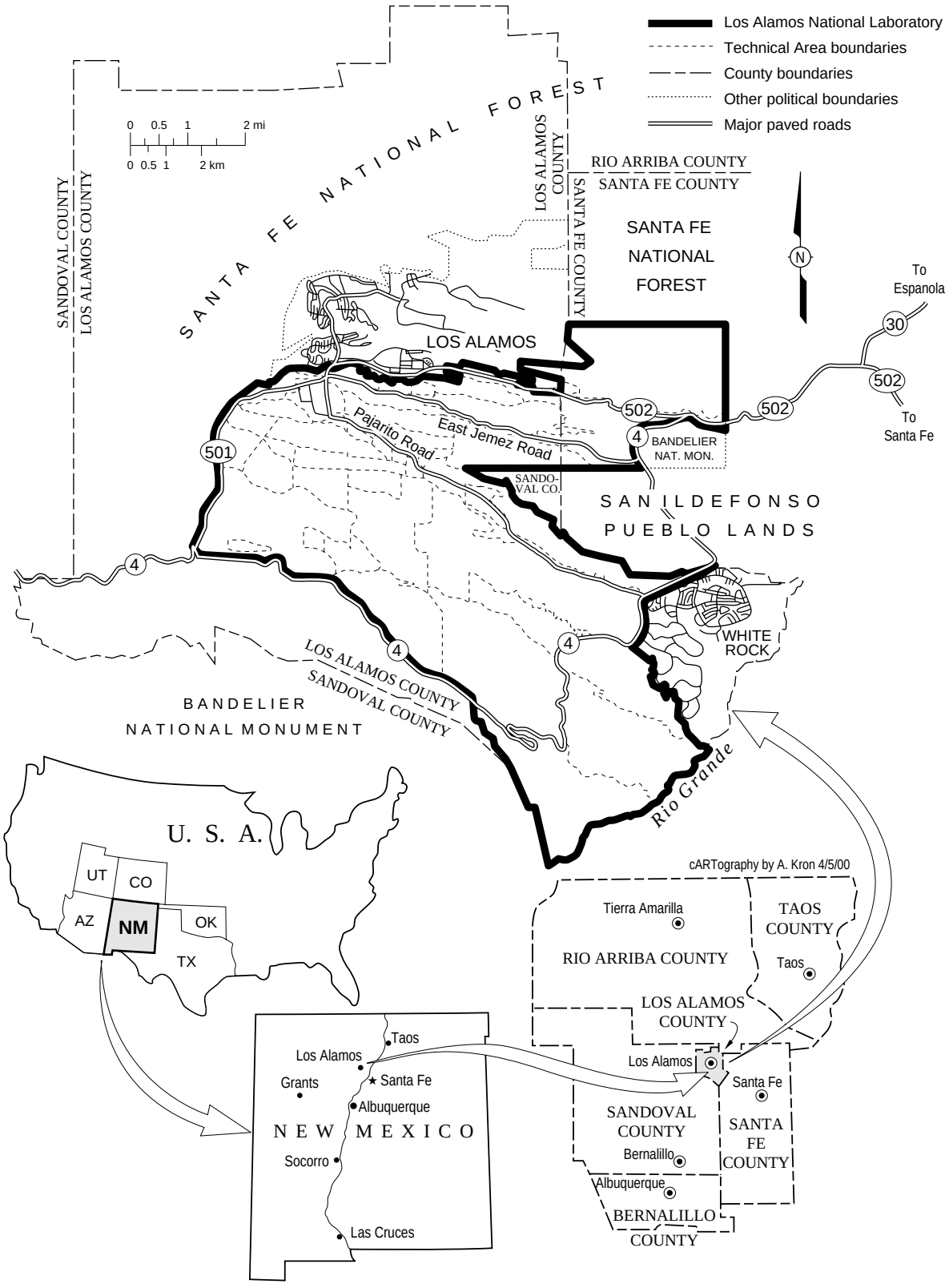

Figure 1. Location of Los Alamos National Laboratory.

1.2 Background

The United States (U.S.) National Security Policy requires the DOE NNSA to maintain core intellectual and technical competencies in nuclear weapons and to maintain a safe, and reliable, national nuclear weapons stockpile. NNSA fulfills its national security nuclear weapons responsibilities, in part, through activities performed at LANL. LANL is one of three national security laboratories that support DOE's responsibilities for national security, energy resources, environmental quality, and science. The DOE NNSA's national security mission includes the safety and reliability of the nuclear weapons in the stockpile; maintenance of the nuclear weapons stockpile in accordance with Executive directives; stemming the international spread of nuclear weapons materials and technologies; developing technical solutions to reduce the threat of weapons of mass destruction; and production of nuclear propulsion plants for the U.S. Navy. The energy resources mission of DOE includes research and development (R&D) for energy efficiency, renewable energy, fossil energy, and nuclear energy. The DOE's environmental quality mission includes treatment, storage, and disposal of DOE wastes; cleanup of nuclear weapons sites; pollution prevention; storage and disposal of civilian radioactive waste; and development of technologies to reduce risks and reduce cleanup costs. DOE's science mission includes fundamental research in physics, materials science, chemistry, nuclear medicine, basic energy sciences, computational sciences, environmental sciences, and biological sciences, and often contributes to the other three DOE missions. LANL provides support to each of these departmental missions, with a special focus on national security.

To carry out its Congressionally assigned mission requirements, DOE NNSA must maintain a safe and reliable infrastructure at each of the national security laboratories. The 1999 *Final Site-Wide Environmental Impact Statement for Continued Operations of the Los Alamos National Laboratory* (SWEIS) (DOE 1999a) discusses each of the previously identified DOE missions in greater detail and analyzes four different levels of operations at LANL that support these missions. The SWEIS identified the various technical areas at LANL and their associated activities and buildings. The SWEIS also identified the existing circumstances of the natural and human-created environment at LANL. Part of the discussion of infrastructure at LANL includes the following statement (Chapter 3, page 3-58, Section 3.6.2.9): "Natural gas demand is not projected to change across the [SWEIS] alternatives, and this demand is within the existing supply of natural gas to the area; however, the age and condition of the existing supply and distribution system would continue to be a reliability issue for LANL and for residents and other businesses in the area."

Many of the buildings, structures, and infrastructure at LANL were built in the mid-1900s during and after World War II. The original installation for the R&D of the world's first nuclear weapon was established at Los Alamos, New Mexico, in 1943 by the Manhattan District of the U.S. Army Corps of Engineers. At that time it was constructed and equipped as a temporary short-term use facility. This installation has evolved over the past nearly 60 years into the LANL facility of today currently under the administration of the DOE NNSA. LANL was designated as a national security laboratory in 1999 when the NNSA was established by the *1999 National Nuclear Security Administration Act*.

Upgrades to the various utility services at LANL have been ongoing together with routine maintenance activities over the years. However, the replacement of large portions of various

pipe and service transmission lines are now necessary as these delivery system elements have been operating well beyond their original design lives for the past 20 to 30 years and their components are suffering from normal stresses, strains, and general failures.

The reliability of utility service to LANL and to the residents and commercial businesses of the Los Alamos town site, White Rock community, and to residences and businesses beyond Los Alamos County depends upon having intact supply and delivery systems (systems that do not leak product or lose transmission capacity). Reliability of the utility supply and delivery systems also depends upon having redundant system networks. When repair is necessary on isolated portions of a utility system it is necessary to reroute service delivery through other portions of the service systems (much like rerouting traffic over area neighborhood roads when mid-block road repairs force the closure of streets to traffic). Otherwise, without reliable redundant "loops" built into the supply and delivery systems, a total failure of the service to its receptors can result from a single point of failure. As the service lines and pipes at LANL and in the surrounding communities have aged, the frequency of repairs to the systems has increased. In some cases it has become more difficult or impossible to avoid service delivery interruptions while repairs are made due to a lack of redundant loops in segments of the systems. New development of residential and commercial neighborhoods of Los Alamos County, and the permanency and growth of LANL over the past 50 years, together with growth of communities within the Española valley and in the Santa Fe area, have all served to tax the various utility service supply and delivery systems in many ways. Population growth within Los Alamos County has been far exceeded by population growth of Rio Arriba and Santa Fe Counties over the past 30 years (BOC 2002). Expectations are for this upward trend in population growth to continue over the next several decades. The pipeline that brings natural gas into LANL and Los Alamos County also services residences and commercial business beyond in Rio Arriba and Santa Fe Counties and forms part of the redundancy loop for these communities. The continued comfortable lifestyle enjoyed by residents of Los Alamos, Rio Arriba, and Santa Fe Counties and the ability of DOE NNSA to continue to meet its Congressionally mandated missions through activities conducted at LANL depend upon the availability of adequate utilities services and their reliable delivery, including natural gas services.

Natural gas supply at LANL and the surrounding residential and commercial neighborhoods is purchased from the Defense Energy Support Center (for LANL) and the Meridian Oil Company (for Los Alamos County) in the San Juan Basin of northwestern New Mexico, respectively. In the 1990s, DOE transferred to PNM the Federally-owned branch of the main gas supply pipeline feeding into LANL, Los Alamos town site, and beyond into the city of Española. DOE granted easements across LANL to PNM for the purpose of servicing and repairing the existing supply and delivery pipelines. UC uses most of the natural gas supply provided by PNM to Los Alamos County. About 80 percent of the gas is used for heating (both steam and hot air) with the remainder of the gas being used to produce steam for electrical power. LANL has been contemplating upgrading the capacity of its electric power generators at Technical Area (TA) 3 for the past 10 to 20 years or more. A proposal for this effort is now under consideration by DOE NNSA under a separate NEPA analysis. The current expectation is that natural gas usage at LANL would either remain unchanged or decrease should a new electrical power generator(s) be installed at LANL (DOE 1999a). However, with the 1997 DOE decision to convey and transfer land tracts at LANL to the County of Los Alamos and to the Secretary of the Interior, in trust for San Ildefonso Pueblo, per the requirements of Public Law 105-119, natural gas

consumption of Los Alamos County may increase slightly over the next several decades. Future increases in natural gas service requirements by communities within Rio Arriba and Santa Fe Counties are also partially dependent upon the service transmission line that brings natural gas to LANL and Los Alamos County.

Several segments of natural gas transmission and delivery pipelines have been upgraded and redundant loops of pipeline have been installed across LANL and across New Mexico in general over the past two decades. The most recent major upgrades to the natural gas transmission line to LANL and Los Alamos County, which included the installation of relocated segments of redundant loops, occurred in the early to mid-1990s. Within that time frame, several additional segments of the aged supply pipeline, without redundant portions, were identified across northern New Mexico. Plans to provide redundant service supply were undertaken by PNM to correct this multi-community supply system deficiency.

PNM has identified a certain segment of 8.1-inch (in.) (20.3-centimeter [cm]) pipeline in Los Alamos County and within LANL's boundaries as being one that is of high carbon content steel. This approximately 3-mile (mi) (5-kilometer [km]) -long pipeline segment located under State Road (SR) 502 is of a non-standard size and is constructed of high carbon content pipe which has a reduced impact strength compared to modern pipes. This existing line segment is a critical portion of pipeline that forms part of the northern New Mexico redundancy loop to ensure continued adequate supply to many communities and businesses in the northern part of the state and is a limiting factor for increasing the total system's pressure. The size of the line, 8.1 in. (20.3 cm), and the impact-withstanding properties of its composition, make this pipeline segment a choke point for service delivery to LANL and to communities in northwestern New Mexico if repairs are needed on other, larger diameter portions of the pipeline delivery system and service is rerouted through this smaller diameter segment. By virtue of the pipeline's location beneath SR 502, which is a two-lane road also known locally as the "Main Hill Road," necessary repairs result in the need to close the road or restrict traffic to a single lane. Road closure may last for a few hours or several days. In the event of an emergency such as the Cerro Grande Fire (May 2000) when the population of Los Alamos town site was evacuated, having SR 502 closed to traffic would greatly hinder emergency evacuation efforts and could also hinder emergency response efforts as well. Several LANL facilities share a mesa-top location with a heavily populated portion the Los Alamos town site; SR 502 is the main transportation artery for the town site and these LANL facilities.

1.3 Statement of Purpose and Need for Agency Action

The DOE NNSA has assigned a continuing role for LANL in carrying out its national security mission. To enable LANL to continue this enduring responsibility requires that NNSA maintain the capabilities and capacities required in support of its national mission assignments at LANL. To accomplish its mission support activities, a reliable natural gas service supply system is necessary. Additionally, NNSA must provide adequate emergency response actions necessary at LANL facilities. NNSA needs to ensure that adequate maintenance is performed and the redundancy of the natural gas supply line is assured so that natural gas delivery to LANL does not suffer interruption and that emergency response actions can be conducted at LANL facilities in a reasonable fashion.

1.4 Scope of This EA

A sliding-scale approach (DOE 1993) is the basis for the analysis of potential environmental and socioeconomic effects in this EA. That is, certain aspects of the Proposed Action have a greater potential for creating environmental effects than others; therefore, they are discussed in greater detail in this EA than those aspects of the action that have little potential for effect. For example, implementation of the Proposed Action would affect water quality, biological, and cultural resources in the LANL area. This EA, therefore, presents in-depth descriptive information on these resources to the fullest extent necessary for effects analysis. On the other hand, implementation of the Proposed Action would cause only a minor effect on socioeconomics at LANL. Thus, a minimal description of socioeconomic effects is presented.

When details about a Proposed Action are incomplete, as a few are for the Proposed Action evaluated in this EA (for example, the exact amount of waste generated), a bounding analysis is often used to assess potential effects. When this approach is used, reasonable maximum assumptions are made regarding potential aspects of project activities (see Sections 2.0 and 3.0 of the EA). Such an analysis usually provides an overestimation of potential effects. In addition, any proposed future action(s) that exceeds the assumptions (the bounds of this effects analysis) would not be allowed until an additional NEPA review could be performed. A decision to proceed or not with the action(s) would then be made.

1.5 Public Involvement

NNSA provided written notification of this NEPA review to the State of New Mexico, the four Accord Pueblos (San Ildefonso, Santa Clara, Jemez, and Cochiti), Acoma Pueblo, the Mescalero Apache Tribe, and to over 30 stakeholders in the area on August 27, 2001. In addition, upon release of this draft EA, NNSA will allow for a 21-day comment period. Where appropriate and to the extent practicable, concerns and comments will be considered in the final EA.

2.0 DESCRIPTION OF PROPOSED ACTION AND ALTERNATIVES

This section discusses the Proposed Action and the No Action Alternative. Section 2.1 describes the Proposed Action for the EA that would allow NNSA to meet its purpose and need for agency action. The No Action Alternative is presented in Section 2.2 as a baseline for comparison with the consequences of implementing the Proposed Action. Alternatives that were considered but dismissed from further analysis in this EA are discussed in Section 2.3, and related actions are discussed in Section 2.4.

2.1 Proposed Action

NNSA is considering granting a new easement to PNM to allow construction, operation, and maintenance of approximately 15,000 feet (ft) (4,500 meters [m]) of 12-in. (30-cm) of coated steel natural gas transmission mainline within LANL boundaries in Los Alamos Canyon (Figure 2). The technical areas affected include TA-21, TA-53, TA-73, and TA-72 (Figure 2). The new gas line would begin at the existing valve located in the bottom of Los Alamos Canyon, adjacent to the existing 12-in. (30-cm) PNM gas transmission mainline (Figure 3). The new gas line would cross the canyon southward and continue east paralleling the existing electrical power line